

**COLLEGE OF TROPICAL AGRICULTURE
AND HUMAN RESOURCES
ENERGY RESEARCH AND EDUCATION PROJECTS**

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July 1980



Hawaii Institute of Tropical Agriculture and Human Resources

Community Resource Development

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INTRODUCTION*

At the present time, 92 percent of Hawaii's energy is supplied by petroleum--all of which must be shipped into the islands. With increasing prices and unstable world oil supplies, it is imperative that Hawaii conserve existing energy and develop alternative energy sources.

Although Hawaii has large supplies of such indigenous energy resources as solar energy (direct and indirect), biomass, wind, and geothermal energy, economically feasible methods of utilizing them must be developed. For some years, the College of Tropical Agriculture and Human Resources (CTAHR) has conducted many projects which further the knowledge of these resources. Projects include research as well as education.

The CTAHR cooperates with many other bodies of the University and the community in its energy activities. Many of the projects of the College are coordinated with the Hawaii Natural Energy Institute, the designated coordinating agency for energy research at the University of Hawaii at Manoa. The Hawaii State Energy Office and the Hawaii State Energy Extension Service are two organizations whose information and cooperation is important to the College. The U.S. Department of Agriculture provides much of the support for research and education activities in energy. Finally, several of the College's activities in energy have been cooperative efforts with Hawaii business.

*This publication was compiled by Eileen A. Mortenson, Program Assistant, and Anthony T. Nakazawa, Community Resource Development Specialist, Hawaii Institute of Tropical Agriculture and Human Resources and James J. Harpstrite, University of Hawaii College of Education. (HITAHR combines the functions of the University of Hawaii Agricultural Experiment Station and the Cooperative Extension Service.) Funding was made available in part by Title V of the Rural Development Act of 1972 and the Hawaii Energy Extension Service.

The College has many levels of faculty, researchers and staff who are involved with the conservation or development of energy resources. Research scientists investigate and experiment with new ways to produce energy from existing island resources. Faculty members develop and deliver educational programs. CTAHR's outreach educational programs are conducted by the extension component of the College's recently established Hawaii Institute of Tropical Agriculture and Human Resources, which combines the functions of the Hawaii Agricultural Experiment Station and the Cooperative Extension Service.

CTAHR's energy expertise and experience have never been catalogued. The goal of this directory project has been to gather and present complete information on the many levels of energy-related research and educational activities of the College of Tropical Agriculture and Human Resources. Thirty-three projects have been identified; 19 are research and 14 are educational.

All of the projects are categorized and listed according to type of energy. Information given for each project includes:

- project title
- project description
- project date(s)
- project location
- project leader
- participating department(s)
- funding source(s)

The departments of the College which conduct energy activities are listed, and address, telephone number and chairperson of each is given.

Similar information is provided for the College's Cooperative Extension Service. A bibliography of energy-related publications by CTAHR faculty and research staff completes the Directory.

PROJECTS

A. BIOMASS

1. PROJECT TITLE: ALGAE PRODUCTION

Project Description:

System design studies have been conducted for improved production of algal energy and cell protein. Low cost anaerobic digesters combined with algae growing units have been designed.

Project Date(s): 1977 - ongoing

Project Location: Oahu

Project Leader: Dr. P.Y. Yang

Participating Department(s): Agricultural Engineering
Department

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources, Governor's Agricultural Coordinating Committee

2. PROJECT TITLE: ASSESSMENT OF KOA HAOLE CHARCOAL AS SUPPLEMENT FUEL

Project Description:

Assessment of the ash of Koa Haole (Giant Leucaena) charcoal as a supplement fuel for electric-generating diesel engines and its possible (wear and corrosion factors) effects on the internal parts of these engines.

Project Date(s): December, 1979

A. BIOMASS (continued)

Project Leader: Dr. R.C. Jones

Participating Department(s): Agronomy and Soil Science

Department, Horticulture Department

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources

3. PROJECT TITLE: BIOMASS PRODUCTIVITY ANALYSIS OF KOA HAOLE

Project Description:

This project will analyze Koa Haole (Giant Leucaenas) for their promise as fuel, and will attempt to identify strains with high fuel and wood productivity. Variables include: (1) different species, (2) different varieties, (3) different densities, (4) different sites, and (5) different management systems.

Project Date(s): 1978 - 1983

Location: Kauai, Maui, Molokai, Oahu

Project Leader: Dr. James L. Brewbaker

Participating Department(s): Horticulture Department,
Agricultural Engineering Department, Agronomy and Soil
Science Department

Funding Source(s): U.S. Department of Agriculture, Lokahi
Pacific, Hawaii Natural Energy Institute

4. PROJECT TITLE: CELLULOSE DEGRADING ENZYMES IN WOOD TERMITES

A. BIOMASS (continued)

Project Description:

This project uses enzymes from termites to convert cellulose to glucose. Current efforts are directed toward identifying the specific enzyme source(s) responsible for the conversion of cellulose to glucose. Tests are being conducted to measure the individual enzymatic activities of the termites and their protozoan/bacterial inhabitants. Long range goals include the preparation of active enzymes from one or more of these sources in order to produce more sugar for liquid fuel production.

Project Date(s): 1979 - ongoing

Location: Oahu

Project Leader: Drs. Joseph Tu and H.A. Frank

Participating Department(s): Food Science and Human Nutrition
Department, Entomology Department

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources

5. PROJECT TITLE: ENERGY IN HAWAIIAN AGRICULTURE: REQUIREMENTS,
ADJUSTMENTS, AND ALTERNATIVES

Project Description:

The basic objective of the project is to estimate energy requirements of Hawaiian agriculture and to explore the potential of new energy sources to meet them. Work

A. BIOMASS (continued)

completed includes a detailed inventory and sectoral analysis of energy use in sugarcane and pineapple industries, a study of bagasse and pineapple trash as energy sources, and a statewide linear programming model of energy use in agriculture.

Project Date(s): 1974 - ongoing

Location: Statewide

Project Leader: Dr. Chennat Gopalakrishnan

Participating Department(s): Agricultural and Resource
Economics Department

Funding Source(s): U.S. Department of Agriculture - Science
and Education Administration

6. PROJECT TITLE: ETHANOL PRODUCTION PROJECT

Project Description:

Proposed pilot project for ethanol production, for evaluating its by-products and their potential use as feed, and to examine potential recovery of potassium. The project is being conducted with the cooperation of the Hawaii Sugar Producers Association.

Project Date(s): 1980 - 1982

Location: Maui, Oahu

Project Leader: Dr. Richard Stanley

Participating Department(s): Animal Science Department

Funding Source(s): U.S. Department of Energy

A. BIOMASS (continued)

7. PROJECT TITLE: EVALUATION OF ETHANOL PRODUCTION BY-PRODUCTS

Project Description:

Chemical analysis to evaluate the utilization of by-products as animal feed from the conversion of molasses to ethanol.

Project Date(s): 1979 - 1980

Location: Oahu

Project Leader: Dr. Richard Stanley

Participating Department(s): Animal Science Department

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources

8. PROJECT TITLE: FEED VALUE OF SUGAR AND PINEAPPLE BY-PRODUCTS

Project Description:

Department has had a long interest in the use of by-products of the sugar and pineapple industries, especially in water and ash removal methods, as well as chemical and physical treatments to improve their value as feed. These by-products, combustible as fuel, are also combustible as feed in animals.

Project Date(s): 1980 -1982

Location: Oahu

Project Leader: Dr. Richard Stanley

Participating Department(s): Animal Science Department

Funding Source(s): Hawaii Institute of Tropical Agriculture

A. BIOMASS (continued)

and Human Resources

9. PROJECT TITLE: FUELWOOD PRODUCTIVITY OF FAST GROWING SUBTROPICAL
TREE LEGUMES

Project Description:

This project will determine growth rates, fuelwood properties and site adaptability and performance of Koa Haoles (Giant Leucaenas).

Project Date(s): 1980 - 1983

Location: Statewide and Taiwan

Project Leader: Dr. James L. Brewbaker

Participating Department(s): Horticulture Department, Agronomy
and Soil Science Department

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources, U.S. Department of Agriculture -
Science and Education Administration

10. PROJECT TITLE: METHANE PRODUCTION

Project Description:

Studies are centered on the development of design parameters and criteria for anaerobic conversion of biomass. Research has included the study of biomass resources from animal manures, food processing wastes, seaweed, spent fruit fly medium, algae and sludge. The use of

A. BIOMASS (continued)

flexible bag methane generators for swine manures has been demonstrated at local farm sites. Expansion of the research demonstration activities for dairy animals is being planned for Maui with the specific purpose of generating electricity for dairy usage. The Hawaii Agricultural Experiment Station, Maui branch station, is cooperating in this research.

Project Date(s): 1977 - ongoing

Location: Maui, Oahu

Project Leader: Dr. P.Y. Yang

Participating Department(s): Agricultural Engineering

Department

Funding Source(s): Hawaii Natural Energy Institute, U.H.

Office of Research Administration, Governor's Agricultural Coordinating Committee, Hawaii Institute of Tropical Agriculture and Human Resources

11. PROJECT TITLE: PRODUCTION OF ETHANOL FUEL AND PROTEIN RESIDUES

Project Description:

Preliminary studies have been initiated on the production of ethanol fuel and protein enriched residues for livestock and aquaculture feed from various pre-treated indigenous crops and food processing wastes. The use of fermentation stillage as feed and for anaerobic digestion to recover methane gas to be used to heat the still is being studied.

A. BIOMASS (continued)

Project Date(s): 1979 - 1980

Location: Oahu

Project Leader: Dr. P.Y. Yang

Participating Department(s): Agricultural Engineering
Department

Funding Source(s): U.H. Office of Research Administration,
Hawaii Institute of Tropical Agriculture and Human
Resources

B. SOLAR

1. PROJECT TITLE: SOLAR CORN DRYING

Project Description:

A plastic (composition) bag solar collector has been
installed on an experimental farm to test the feasibility
of drying corn.

Project Date(s): 1980

Location: Oahu

Project Leader: Dr. James L. Brewbaker

Participating Department(s): Horticulture Department, Agricul-
tural Engineering Department

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources, Hawaii Seed Foundation

2. PROJECT TITLE: SOLAR ENERGY IN FOOD PROCESSING

B. SOLAR (continued)

Project Description:

Research on use of solar energy in food processing including testing of the concept of freeze-drying and osmovac-drying with solar energy, dehydration versus radiation for food preservation and solar drying of various tropical fruit products.

Project Date(s): 1977 - ongoing

Location: Oahu

Project Leader: Dr. James H. Moy

Participating Department(s): Food Science and Human

Nutrition Department/Agricultural Experiment Station

Funding Source(s): U.S. Department of Energy, U.S. Department of Agriculture

C. WIND

1. PROJECT TITLE: WIND-POWERED NITROGEN FERTILIZER GENERATION

Project Description:

A demonstration research unit for the generation of nitrogen fertilizer using wind energy is under development. Other farm operations utilizing wind energy are planned in conjunction with this project.

Project Date(s): 1980 - 1981

Location: Oahu

Project Leader: Dr. M. Ray Smith

Participating Department(s): Agricultural Engineering

C. WIND (continued)

Department

Funding Source(s): Hawaii Natural Energy Institute, Kettering
Research Laboratories, East-West Center

D. GEOHERMAL

1. PROJECT TITLE: ECONOMIC AND ENGINEERING STUDIES FOR DIRECT
APPLICATIONS OF GEOTHERMAL ENERGY

Project Description:

Primary objective of project is to generate technical,
economic, institutional and environmental data under
field operating conditions that will facilitate decisions
on utilization of geothermal energy by prospective users.

Project Date(s): 1979 - 1980

Location: Oahu

Project Leader: Dr. Chennat Gopalakrishnan

Participating Department(s): Agricultural and Resource
Economics Department

Funding Source(s): U.S. Department of Energy, Dillingham
Corporation

E. FARM ENERGY CONSERVATION

1. PROJECT TITLE: ENERGY CONSERVATION - DRIP IRRIGATION

Project Description:

Proposed project to conserve energy and water by optimizing

E. FARM ENERGY CONSERVATION (continued)

drip irrigation efficiency. It would extend current work on optimal irrigation system design and scheduling to include minimum energy usage consistent with good crop production. This project will be conducted in collaboration with the U.S. Water Conservation Laboratory in Phoenix, Arizona.

Project Date(s): (Proposed)

Location: Oahu

Project Leader: Dr. I-Pai Wu

Participating Department(s): Agricultural Engineering
Department

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources

2. PROJECT TITLE: ENERGY CONSERVATION IN DAIRY OPERATIONS

Project Description:

This study of heat recovery units for heating water with heat normally rejected from refrigeration systems will include engineering and economic analyses of pre-cooler plate cooler for milk refrigeration. Other current research involving: (1) the potential of heat recovery units on milk refrigeration units, and; (2) determining patterns of shade cast by objects is included.

Project Date(s): 1980

Location: Oahu

E. FARM ENERGY CONSERVATION (continued)

Project Leader: Dr. Dennis Buffington (Visiting Researcher)

Participating Department(s): Agricultural Engineering

Department

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources

F. HOME ENERGY CONSERVATION

1. PROJECT TITLE: CONSEQUENCES OF ENERGY CONSERVATION POLICIES
FOR WESTERN REGION HOUSEHOLDS

Project Description:

- a. Describe the acceptability of home-related energy conservation policies and practices by rural and urban households in the Western Region.
- b. Determine the influences of (1) housing characteristics, (2) current energy use, (3) demographic characteristics, (4) household lifestyles, (5) geographic location and (6) energy knowledge on the acceptability of energy conservation policies and practices.
- c. Monitor changes in energy conservation practices over time, and identify the factors related to their occurrence.

Project Date(s): 1980 - ongoing

Project Leader: Dr. Mary Ellen Des Jarlais

Participating Department(s): Home Economics Department

Funding Source(s): Western Regional Coordinating Committee on
Family Housing

F. HOME ENERGY CONSERVATION (continued)

2. PROJECT TITLE: SPACE AND ENERGY IN THE HOME

Project Description:

This study will determine the use and storage of portable electric appliances used in food preparation and service in the home. It will also identify guidelines for the purchase of these appliances.

Project Date(s): 1979 - ongoing

Location: Statewide

Project Leader: Dr. Mary Ellen Des Jarlais

Participating Department(s): Home Economics Department,
joint effort with the State of Montana - Cooperative
Extension Service

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources

G. ENERGY EDUCATION

1. PROJECT TITLE: AGRICULTURAL COMMUNICATION WITH THE ATS-1
SATELLITE

Project Description:

Conferences on agriculture were held on the PEACESAT ATS-1 Network in 1978 and 1979. During these conferences, Peace Corps members and other interested parties from Fiji, Cook Islands, Tonga, Western and American Samoa, Saipan and New Zealand discussed solar energy and energy conservation methodologies with University of Hawaii personnel.

G. ENERGY EDUCATION (continued)

Project Date(s): 1978, 1979, 1980

Project Leader: Dr. Shosuke Goto, Associate Dean

Funding Source(s): United States Peace Corps

2. PROJECT TITLE: CONSUMER'S GUIDE TO BUYING A SOLAR HOT WATER
HEATING SYSTEM

Project Description:

This 24-page guide explains the operation of a solar hot water heater, describes its effects, discussed local considerations in purchasing a system. Pictures and plans of solar heaters are shown.

Project Date(s): 1979 - 1980

Location: Oahu

Project Leader: Diane Masuo

Participating Department(s): Home Economics Department

Funding Source(s): Home Economics Department, Hawaii Housing
Authority

3. PROJECT TITLE: ENERGY CONSERVATION IN LAUNDERING

Project Description:

Public education program on techniques to save energy in laundering. The project includes teaching in textile courses, public education at State Farm Fair and talks to community groups. A handout was developed.

G. ENERGY EDUCATION (continued)

Project Date(s): Ongoing

Project Leader: Barbara Harger

Participating Department(s): Textiles and Clothing Department

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources

4. PROJECT TITLE: ENERGY CONSERVATION MATERIAL FOR CHILDREN

Project Description:

Design, development and dissemination of children's
coloring books and filmstrip about energy: "Auntie
Energy Ant in Paradise."

Project Date(s): 1978

Project Leader: Bernardine Alexander, Vera Y. Reid

Participating Department(s): HITAHR - Extension

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources

5. PROJECT TITLE: ENERGY CONSERVATION/SOLAR ENERGY WORKSHOPS

Project Description:

In-service training program for County Extension Agents
on Oahu, Kauai, Maui, and Hawaii Counties on energy
conservation principles and methods dealing with solar
water heating and solar food drying, and home energy
conservation measures. Workshops also offered to general
public.

G. ENERGY EDUCATION (continued)

Project Date(s): 1979 - 1980

Location: Statewide

Project Leader: Dr. Anthony T. Nakazawa

Participating Department(s): HITAHR - Extension, UH Energy
Education Project

Funding Source(s): Hawaii Energy Extension Service

6. PROJECT TITLE: FARM ENERGY APPLICATIONS

Project Description:

A short course on use of solar power for heating applications
and food drying to be offered in the New/Young Farmers Program
at evening classes.

Project Date(s): 1980

Location: Kauai

Project Leader: Dennis Ikehara

Participating Department(s): HITAHR - Extension/Kauai

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources

7. PROJECT TITLE: HOME ENERGY MANAGEMENT RESOURCES

Project Description:

Development and dissemination of educational brochures for
consumers in energy conservation: "Dollar Saving, Energy-
Saving Tips for Your Home", "Energy Management Checklist

G. ENERGY EDUCATION (continued)

for the Home", "Be an Akamai Energy User". Total of
10,000 copies distributed.

Project Date(s): 1976 - 1978

Project Leader: Vera Y. Reid

Participating Department(s): HITAHR - Extension

Funding Source(s): U.S. Department of Agriculture, Hawaii
Institute of Tropical Agriculture and Human Resources

8. PROJECT TITLE: MAUI CONSUMER ENERGY EDUCATION

Project Description:

Educational program information on energy conservation
includes the following topics:

- 1) "Dollar Saving Energy Tips for Your Home"
(Project Leader Training)
- 2) "Compost Gardening" (Project Leader Training)
- 3) "Recycling Fabrics" (Project Leader Training
Consumer Education Workshop--"Common Sense Series")
- 4) "Solar Food Drying" (Project Leader Training and
Public Meeting)
- 5) "Preparation of Island-Style Meals in the Microwave
Oven" (Project Leader Training)
- 6) "The Energy Crisis" (Consumer Education Workshops--
"Common Sense Series")

Project Date(s): Ongoing

Location: Maui

G. ENERGY EDUCATION (continued)

Project Leader: Charlotte Nakamura

Participating Department(s): HITAHR - Extension/Maui

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources

9. PROJECT TITLE: MEDIA PRESENTATIONS ON ENERGY

Project Description:

1) Three-part TV series on selecting, constructing and installing a solar hot water heater. 2) TV show and radio show on alternate energy. (For availability of tapes/videotapes, contact project leader.)

Project Date(s): 1979 - 1980

Location: Oahu

Project Leader: Bernardine Alexander

Participating Department(s): HITAHR - Extension

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources, Hawaii Energy Extension Service

10. PROJECT TITLE: OAHU CONSUMER ENERGY EDUCATION

Project Description:

Programs and materials developed, for training both staff and the general public. Topics: 1) Energy-saving Meals; 2) Drying Food at Home; 3) Time and Energy Tips in Sewing.

Project Date(s): 1979 - 1980

Location: Oahu

G. ENERGY EDUCATION (continued)

Project Leader: Rhoda Yoshino

Participating Department(s): HITAHR - Extension/Manoa,
HITAHR - Extension/Oahu

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources

11. PROJECT TITLE: SOLAR DRYING OF FOODS

Project Description:

Developed and held series of workshops on the construction
of a solar food dryer and its use.

Project Date(s): 1980

Location: Kauai

Project Leader: Marjorie Russell

Participating Department(s): HITAHR - Extension/Kauai,
HITAHR - Extension/Manoa

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources, Hawaii Energy Extension Service

12. PROJECT TITLE: SOLAR ENERGY WORKSHOPS

Project Description:

Series of workshops on solar food drying and solar hot
water heating. Additionally, the Hilo Extension Home-
makers monthly newsletter highlights energy saving
activities.

G. ENERGY EDUCATION (continued)

Project Date(s): 1980

Location: Hawaii

Project Leader: Betty Jo Thompson

Participating Department(s): HITAHR - Extension/Hawaii,
HITAHR - Extension/Manoa

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources, Hawaii Energy Extension Service

13. PROJECT TITLE: STATE FARM FAIR ENERGY EXHIBITS

Project Description:

Educational exhibits at 1980 State Farm Fair on energy,
environment, and natural resources.

Project Date(s): 1980

Location: Oahu

Project Leader: Bernardine Alexander

Participating Department(s): HITAHR - Extension

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources

14. PROJECT TITLE: SOLAR HOT WATER HEATING AND FOOD DRYING

Project Description:

Seminars and workshop for University Extension members
and guests to introduce principles of solar hot water
heating and food drying.

G. ENERGY EDUCATION (continued)

Project Date(s): 1980

Location: Oahu

Project Leader: Frances Au

Participating Department(s): HITAHR - Extension/Oahu,

HITAHR - Extension/Manoa

Funding Source(s): Hawaii Institute of Tropical Agriculture
and Human Resources, Hawaii Energy Extension Service

COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES

AGRICULTURAL AND RESOURCE ECONOMICS DEPARTMENT*

AGRICULTURAL BIOCHEMISTRY DEPARTMENT

AGRICULTURAL ENGINEERING DEPARTMENT*

AGRONOMY AND SOIL SCIENCE DEPARTMENT

ANIMAL SCIENCES DEPARTMENT*

ENTOMOLOGY DEPARTMENT*

FOOD SCIENCE AND HUMAN NUTRITION DEPARTMENT*

HOME ECONOMICS DEPARTMENT*

HORTICULTURE DEPARTMENT*

HUMAN DEVELOPMENT DEPARTMENT

PLANT PATHOLOGY DEPARTMENT

TEXTILES AND CLOTHING DEPARTMENT*

UNIVERSITY OF HAWAII COOPERATIVE EXTENSION SERVICE*

UNIVERSITY OF HAWAII AGRICULTURAL EXPERIMENT STATIONS*

*Departments with Energy Related Activities

COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES
DEPARTMENTS WITH ENERGY-RELATED ACTIVITIES

- Agricultural and Resource Economics Department
210A Bilger Hall, 2545 The Mall
University of Hawaii, Honolulu, Hawaii 96822
Phone Number: 948-8420
Chairperson: Dr. Frank S. Scott, Jr.
- Agricultural Engineering Department
111A Gilmore Hall, 3050 Maile Way
University of Hawaii, Honolulu, Hawaii 96822
Phone Number: 948-8867
Chairperson: Dr. M. Ray Smith
- Agronomy and Soil Science Department
303A St. John Hall, 3190 Maile Way
University of Hawaii, Honolulu, Hawaii 96822
Phone Number: 948-7530
Chairperson: Dr. Peter Rotar
- Animal Sciences Department
107 Henke Hall, 1800 East West Road
University of Hawaii, Honolulu, Hawaii 96822
Phone Number: 948-8295
Chairperson: Dr. Richard Stanley
- Textile and Clothing Department
208 Miller Hall, 2515 Campus Road
University of Hawaii, Honolulu, Hawaii 96822
Phone Number: 948-8133
Chairperson: Dr. Richard Kappenberg
- Food Science and Human Nutrition Department
Food Science and Technology Building, 1920 Edmondson Road
University of Hawaii, Honolulu, Hawaii 96822
Phone Number: 948-8210
Chairperson: Dr. Robert Van Reen
- Home Economics Department
7 Miller Hall, 2515 Campus Road
University of Hawaii, Honolulu, Hawaii 96822
Phone Number: 948-8105
Chairperson: Dr. Richard Kappenberg
- Horticulture Department
102A St. John Lab, 3190 Maile Way
University of Hawaii, Honolulu, Hawaii 96822
Phone Number: 948-8389
Chairperson: Dr. Roy Nishimoto

- Entomology Department
310 Gilmore Hall, 3050 Maile Way
University of Hawaii, Honolulu, Hawaii 96822
Phone Number: 948-7076
Chairperson: Dr. Frank Haramoto

COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES
HITAHR - EXTENSION SERVICE
ENERGY EDUCATION ACTIVITIES

- Agricultural Programs
203B Gilmore Hall, 3050 Maile Way
University of Hawaii, Honolulu, Hawaii 96822
Phone Number: 948-8139
Assistant Director: George M. Nakasato
- Home Economics Programs
203A Gilmore Hall, 3050 Maile Way
University of Hawaii, Honolulu, Hawaii 96822
Phone Number: 948-8228
State Leader: Margaret E. Fitch
- 4-H, Youth Programs
214B Gilmore Hall, 3050 Maile Way
University of Hawaii, Honolulu, Hawaii 96822
Phone Number: 948-8327
State Leader, 4-H Youth: Dr. Joe T. Waterson
- Community Resource Development Programs
123 Gilmore Hall, 3050 Maile Way
University of Hawaii, Honolulu, Hawaii 96822
Phone Number: 948-7711
Community Resource Development Specialist: Dr. Anthony T. Nakazawa
- Oahu County Cooperative Extension Service
Wahiawa Civic Center
910 California Avenue
P.O. Box 610
Wahiawa, Hawaii 96786
Phone Number: 622-4185
County Chairperson: Bernice Arakawa
- Maui County Cooperative Extension Service
University of Hawaii
310 Kaahumanu Avenue, Building 214
Kahului, Hawaii 96732
Phone Number: 244-3242
County Chairperson: Daniel T. Shigeta
- Kauai County Cooperative Extension Service
State Office Building
P.O. Box 3150
Lihue, Hawaii 96766
Phone Number: 245-4471
County Chairperson: Dennis I. Ikehara

- Hawaii County Cooperative Extension Service
875 Komohana Street
Hilo, Hawaii 96720
Phone Number: 959-9155
County Chairperson: Tadashi Higaki

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PLEASE NOTE: As part of a structural reorganization, the Hawaii Cooperative Extension Service and the Hawaii Agricultural Experiment Station have been merged under the new name **HAWAII INSTITUTE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES**, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa.

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INFORMATION TEXT SERIES PUBLICATION (IT) 001

JULY, 1980 (1M)